

IN THE CLAIMS

1. - 32. (canceled)

33. (previously presented) A mobile station in a mobile communication system,
comprising:

a timing unit for determining, based upon a received downlink signal, timing for sending
an uplink signal,

a receiving unit for receiving a plurality of downlink signals from a plurality of base
stations in a soft handoff mode with the mobile station, and

a controller for determining a window of time for receiving downlink signals from the
plurality of base stations, said controller determining the window of time based upon the
determined timing for sending an uplink signal, wherein

said controller controlling processing of downlink signals from the plurality of base
stations such that only downlink signals having a receive timing during the window of time will
be processed to affect an uplink signal.

34. (currently amended) A mobile station in a mobile communication system,
comprising:

a receiving unit for receiving a plurality of downlink signals from a plurality of base
stations in a soft handoff mode with the mobile station,

a timing unit for determining, based upon a received downlink signal of the plurality of
downlink signals, timing for sending of an uplink signal,

a controller for determining a window of time for receiving downlink signals from the plurality of base stations, said controller determining the window of time based upon the determined timing for sending an uplink signal or said received downlink signal, and said controller controlling the transmission of an uplink signal based upon only downlink signals from the plurality of base stations having a receive timing during the window of time[.].

35. (previously presented) The mobile station of claim 34, wherein said window of time ends prior to the next uplink signal to allow for a processing time required to generate the transmit power control for controlling the transmit power of a next uplink signal.

36. (previously presented) A mobile station in a mobile communication system, comprising:

a timing unit for timing a sending of an uplink signal based on a received downlink signal of a plurality of downlink signals received from a plurality of base stations in a soft handoff mode with the mobile station,

a controller for determining a window of time based upon the determined timing for sending an uplink signal and said controller controlling the transmission of an uplink signal based upon only downlink signals from the plurality of base stations having a receive timing during the window of time, wherein

said controller controlling the transmit power of the uplink signal according to transmit power control data included in only downlink signals from the plurality of base stations having a receive timing during the window of time.

37. (previously presented) The mobile station of claim 36, further comprising:

a measuring unit for measuring a quality of one or more of the received downlink signals,

and

a generating unit for generating transmit power control data according to only the quality of received signals which reach the generating unit a predetermined period earlier than timing of sending transmit power control data in a next uplink signal,

wherein said predetermined period is for a processing time required to generate the transmit power control data.

38. (previously presented) A mobile station in a mobile communication system,

comprising:

a receiving unit for receiving transmission signals respectively transmitted in parallel from a plurality of base stations in the mobile communication system, said base stations in a soft handoff mode with said mobile station,

a channel control unit for determining from at least one of said transmission signals a channel control timing for controlling the transmit timing from the mobile station and processing the received transmission signals and providing an output to affect a next uplink signal according to said channel control timing, and

a processing unit for processing only transmission signals received during a window of time, said window of time determined based upon the channel control timing and is a predetermined time prior to sending of the next uplink signal, and providing a transmit power control of a next uplink signal based upon said processing.

39. (previously presented) A mobile station in a mobile communication system, comprising:

a channel control unit for determining from at least one downlink signal of a plurality of downlink signals received from a plurality of base stations in a soft handoff mode with the mobile station, a channel control timing for controlling the transmit timing from the mobile station,

a controller for determining a window of time based upon the determined channel control timing, said window of time prior to sending a next uplink signal and processing received transmit power control data from downlink signals received during said window of time,

a measuring unit for measuring a respective value of signal quality from one or more of a received plurality of downlink signals, and

a generating unit for generating the transmit power control data to be included in a next uplink signal according to the measured value of signal quality of only respective downlink signals received a predetermined time prior to the timing of sending the next uplink signal according to the channel control,

wherein said controller controlling the transmit power of the next uplink signal according to transmit power control data included in downlink signals from the plurality of base stations having a receive timing during the window of time.

40. (previously presented) The mobile station in claim 39 where the mobile station is simultaneously connected with the plurality of base stations via a plurality of radio channels and where the mobile station provides the transmit power control data useful in controlling the transmit power of the base stations, and where

the predetermined period is determined from a minimum processing period for processing a downlink frame to provide transmit power control data to the base stations in a next uplink frame while maintaining channel timing control.

41. (previously presented) An electronic device in a mobile terminal of a mobile communication system, comprising:

a receiving unit for receiving transmission signals respectively transmitted in parallel from a plurality of base stations in the mobile communication system, said base stations in a soft handoff mode with said mobile station,

a processing unit for processing one or more of said transmission signals, and

a channel control unit for determining from at least one of said transmission signals a window of time during which data from only downlink signals from the plurality of base stations having a receive timing during the window of time will be utilized in generating and transmitting a next uplink signal to be transmitted to at least one base station of said plurality of base stations in said soft handoff mode, thereby providing transmit power control for the next uplink signal even if the receiving unit does not receive at least one of the plurality of transmission signals from a respective base station in soft handoff mode.

42. (previously presented) A radio terminal equipment comprising:

a receiving unit for receiving substantially in parallel a plurality of radio waves which may reach the receiving unit at deviating points in time, through a radio transmission path;

a channel controlling unit for processing only radio waves of said plurality of radio waves received by said receiving unit during a period of time according to a channel controlling

procedure even if at least one of the plurality of radio waves is received after said period of time;
and

a transmission unit for transmitting to said radio transmission path a transmission wave signifying a response to any radio wave which is an object of said processing by said channel controlling unit; wherein

said period of time ends a predetermined time prior to the sending of the response, said predetermined time is a period allowing for a length of time needed for executing processes required for said channel controlling procedure including controlling transmit power of the next uplink wave according to radio waves received during said period of time.

43. (previously presented) The radio terminal equipment as claimed in claim 42, wherein said period of time is a period given in advance to said channel controlling unit and is relative to an instant at which a specific one of said plurality of radio waves is received by said receiving unit.

44. (previously presented) The radio terminal equipment as claimed in claim 42, wherein:

said receiving unit obtains an individual time that each radio wave of said plurality of radio waves is received and measures a transmission quality for each of said plurality of radio waves;

said channel controlling unit determines an instant at which said transmission wave is to be transmitted, which is relative to a result of averaging the sum of products of said individual

times each radio wave is received, and said transmission quality measured by said receiving unit from said any radio wave received during said period of time; and

said transmission unit transmits said transmission wave(s) at said instant obtained by said channel controlling unit.

45. (previously presented) The radio terminal equipment as claimed in claim 43, wherein each of said plurality of radio waves reach said radio terminal equipment individually and sequentially in a cycle having a nearly equal nominal value, and
said period of time given in advance is given as a subset of said cycle.

46. (previously presented) The radio terminal equipment as claimed in claim 43, wherein each radio wave of said plurality of radio waves comprises a plurality of frames that reach said radio terminal equipment individually and sequentially in a cycle having a nearly equal nominal value, and
said period of time given in advance is given as a subset of a frame.

47. (previously presented) The radio terminal equipment as claimed in claim 44, wherein each of said plurality of radio waves reach said radio terminal equipment individually and sequentially in a cycle having a nearly equal nominal value, and
said period of time given in advance is given as a subset of said cycle and is relative to timing for sending a response.

48. (previously presented) The radio terminal equipment as claimed in claim 43, wherein each of said plurality of radio waves reach said radio terminal equipment individually and sequentially in a common cycle having a nearly equal nominal value, and

said period of time given in advance is a subset of each period from the earliest point in time, at which any one of said plurality of radio waves reach the receiving unit during a period in said cycle which precedes said period of time given as the subset of each period, to the latest instant at which any of a following said plurality of radio waves reach the receiving unit.

49. (previously presented) The radio terminal equipment as claimed in claim 44, wherein each of said plurality of radio waves reach said radio terminal equipment individually and sequentially in a common cycle having a nearly equal nominal value, and

said period of time given in advance is a subset of each period from the earliest point in time, at which any one of said plurality of radio waves reach the receiving unit during a period in said cycle which precedes said period of time given as the subset of each period, to the latest instant at which any of a following said plurality of radio waves reach the receiving unit.

50. (original) The radio terminal equipment as claimed in claim 42, wherein said channel controlling unit determines lengths of time needed for both said processing said radio waves received by said receiving unit and said processing to be done on responses transmitted by said transmission unit, wherein the processing done by said radio station connected through said radio transmission path includes processing one or more of said radio waves received during a period where said lengths of time needed for the processes are suitable for the system of said channel control.

51. (original) The radio terminal equipment as claimed in claim 50, wherein at least one of said lengths of time needed for the processes to be done on said radio waves received by said receiving unit and/or said process done by said radio station connected through said radio transmission path to be done on said response transmitted by said transmission unit vary in accordance with an event which can be identified by said channel controlling unit while executing said channel control procedure, and

said channel controlling unit determines said lengths of time needed for the processes in accordance with said event identified under said channel controlling procedure.

52. (original) The radio terminal equipment as claimed in claim 50, wherein said channel controlling unit determines said lengths of time needed for the processes to be done on said radio wave received by said receiving unit under said channel controlling procedure with a level of accuracy which will compensate for at least one of a fall in the transmission rate of said radio transmission path and/or a deviation of said radio waves.

53. (original) The radio terminal equipment as claimed in claim 42, wherein said channel controlling unit during the execution of said processing restricts the operation of composing elements to processing said radio waves received by said receiving unit under said channel controlling procedure, said composing elements including said receiving unit, said channel controlling unit, and said transmission unit.

54. (original) The radio terminal equipment as claimed in claim 53, wherein said processing said radio waves received by said receiving unit under said channel controlling procedure by said composing elements includes processing to determine at least one of a period suitable for said transmission system of said radio transmission path and/or a starting point of said period.

55. (previously presented) The radio terminal equipment as claimed in claim 42, wherein each of said plurality of radio waves respectively reach said radio terminal equipment individually and sequentially in a cycle and contain control information on transmitting power control, and

said channel controlling unit controls the transmitting power responsive to said control information included in a specific radio wave of said plurality of radio waves reached during a preceding period of time, through at least one of said receiving unit and said transmission unit.

56. (original) The radio terminal equipment as claimed in claim 42, wherein said channel controlling unit monitors at least one of a transmission quality and a field strength level of a radio wave received by said receiving unit per wireless zone on the basis of zone configuration and channel allocation, and performs a channel control of a wireless zone which has the highest transmission quality.

57. (original) The radio terminal equipment as claimed in claim 42, further comprising

a demodulating unit for acquiring transmission information by one of demodulating at least part of said radio waves, which are the object of the processing by said channel controlling unit and by demodulating said radio waves under predetermined weighting.

58. (original) The radio terminal equipment as claimed in claim 42, further comprising a demodulating unit for acquiring transmission information by one of demodulating at least part of said plurality of radio waves reached through said radio transmission path and received in parallel by said receiving unit, and by demodulating said radio waves under predetermined weighting.

59. (previously presented) The radio terminal equipment as claimed in claim 42, wherein said channel controlling unit determines an instant at which said transmission wave is to be transmitted to said radio transmission path, and

said transmission unit transmits said transmission wave at said instant determined by said channel controlling unit.

60. (previously presented) The radio terminal equipment as claimed in claim 59, wherein said instant at which said transmission wave is to be transmitted to said radio transmission path fluctuates in accordance with events which can be identified by said channel controlling unit during said processing according to said channel control procedure, and

said channel controlling unit obtains said instant at which said transmission wave is to be transmitted in accordance with said events identified under said channel controlling procedure.

61. (previously presented) A base station in a mobile communication system, for receiving an uplink signal from a mobile terminal in the communication system, comprising:

a receiving unit for receiving a transmit power control data generated by a mobile station according to a quality of one or more of a plurality of downlink signals received at said mobile station until a time which is a predetermined period earlier than a timing of sending the transmit power control signal from the mobile station even if the mobile station does not receive at least one of the plurality of downlink signals, thereby limiting the generation of the transmit power control data for a next uplink signal to downlink signals received prior to the predetermined period, and

a transmit power control unit for controlling a transmit power control according to said transmit power control data, wherein

the mobile station generates the transmit power control signal by receiving a plurality of radio waves from a plurality of base stations in a soft handoff mode with the mobile station which may reach the radio terminal equipment at deviating points in time, through a radio transmission path, the mobile station processing only radio waves of said plurality of radio waves having a deviation less than a window of time for receiving the downlink signals from the plurality of base stations, the window of time determined based upon timing for sending an uplink signal to maintain the channel control procedure, and transmitting to said radio transmission path a transmission wave signifying a response to only the radio waves which are an object of said processing, thereby limiting the a response to include only information processed from radio waves received during said window of time.

62. (previously presented) In a mobile radio terminal where transmit and receive timing is controlled by a channel control procedure, a method of transmitting a response to a received plurality of radio waves, comprising the steps of:

receiving substantially in parallel the plurality of radio waves which may reach the radio terminal equipment at deviating points in time, through a radio transmission path;

processing only radio waves of said plurality of radio waves having a deviation less than a window of time for receiving downlink signals from the plurality of base stations, the window of time determined based upon timing for sending an uplink signal to maintain the channel control procedure; and

transmitting to said radio transmission path a transmission wave signifying a response to only the radio waves which are an object of said processing, thereby limiting the a response to include only information processed from radio waves received during said window of time.

63. (original) The method of claim 62, wherein

said channel control procedure includes processing to be done to said transmission wave(s) received by a radio station connected through said radio transmission path and which is also suitable for a transmission system in said radio transmission path.

64. (previously presented) The method of claim 62, further comprising the step of:

determining transmit power control of the response from only radio waves with receive timing during the window of time and the window of time is relative to a point in time at which a specific one of said plurality of radio waves is received.

65. (previously presented) The method of claim 62, further comprising the steps of:

determining an individual time that each radio wave of said plurality of radio waves is received;

measuring a transmission quality for one or more of said plurality of radio waves;

determining a transmission instant, which is a point where said transmission wave is to be transmitted, and is relative to a result of averaging the sum of products of said individual times and said transmission quality measured from said any radio wave received prior to said instant;

and

said transmitting step transmits said transmission waves at said transmitting instant.

66. (previously presented) A method of processing a plurality of downlink signals in a wireless communications system where each downlink signal of said plurality comprises sequential frames and where transmit and receive timing is controlled by a channel control procedure, comprising the steps of:

receiving in parallel the plurality of radio waves which frames may reach the radio terminal equipment at deviating times, through a wireless communication channel from base stations in a soft handoff mode with the radio terminal equipment;

processing only frames of said plurality of radio waves having a deviation less than a window of time for receiving downlink signals from the plurality of base stations, the window of time determined based upon timing for sending an uplink signal in time to maintain the channel control procedure even if at least one of the plurality of radio waves has not yet been received;

and

transmitting through a wireless communication channel an uplink signal signifying a response to said frame(s) which is an object of said processing, thereby limiting the response to include only information processed from radio waves received during said window of time.

67. (original) The method of claim 66, wherein

said channel control procedure includes processing to be done to said uplink signal received by a radio station connected through said wireless communication channel and which is also suitable for a transmission in said wireless communication channel.

68. (previously presented) The method of claim 66, further comprising the step of:

determining transmit power control of the response from only radio waves with receive timing during the window of time and the window of time is relative to a point in time at which a specific one of said plurality of radio waves is received.

69. (previously presented) The method of claim 66, further comprising the steps of:

determining an individual time that each frame of said plurality of radio waves is received;

measuring a transmission quality for one or more of said plurality of radio waves;

determining a transmission instant, which is a point where said uplink signal is to be transmitted, and is relative to a result of averaging the sum of products of said individual times and said transmission quality measured from said any frame received prior to said instant; and

said transmitting step transmits said uplink signal at said transmitting instant.

70. (previously presented) The method of claim 71, further comprising the steps of:

determining a minimum processing time required to generate the transmit power control data such that the transmit power control data can be included in an uplink signal, measuring a respective value of signal quality from one or more of a received plurality of downlink signals, and

generating the transmit power control data to be included in an uplink signal according to the measured value of signal quality of only respective downlink signals received prior to the start of the minimum processing time even if at least one of the plurality of downlink signals is not yet received prior to the start of the minimum processing period.

71. (previously presented) A method of controlling transmit power of an uplink signal from a terminal in a communication system, the terminal capable of simultaneously receiving a plurality of frames in respective downlink signals from a plurality of bases stations in a soft handoff mode with said terminal, the frames in the respective downlink signals having a period of time during which information is contained that is useful in determining the transmit power of the frame of the uplink signal, comprising the steps of:

receiving a downlink signal,

determining from the downlink signal an uplink signal timing used in maintaining channel control in soft handoff mode when generating and transmitting the uplink signal, and

generating transmit power control data to control the transmit power of a next frame of an uplink signal, the generating starting at a time required to maintain the uplink signal timing, and the transmit power control data generated from only frames of data from respective downlink signals having said useful periods of time which are received during a window of time

determined from the uplink signal timing, the window of time ending a predetermined time prior to the transmitting of the uplink window.

72. (previously presented) A method of controlling transmit power of an uplink signal from a terminal in a communication system, the terminal capable of simultaneously receiving a plurality downlink signals from a plurality of bases stations in a soft handoff mode with said terminal, comprising the steps of:

determining a period of time during which transmit power control data of a downlink signal must be received during, said period of time determined based on the receive timing of one of the downlink signals of the plurality of downlink signals, in order to maintain uplink channel control timing while controlling the transmit power in a next uplink frame, and

generating transmit power control data to control the transmit power of the next uplink frame from only the downlink signals having their respective receive timing during the determined period of time.

73. (previously presented) A method of controlling transmission powers in a wireless mobile communication system where a mobile station is simultaneously connected with a plurality of base stations via a plurality of radio channels and where the mobile station provides transmit power control data useful in controlling the transmit power of the base stations and the base stations provide transmit power control data useful in controlling the transmit power of the mobile station, comprising the steps of:

receiving a plurality of downlink signals from a plurality of base stations in a soft handoff mode with the mobile station;

determining, based upon a received downlink signal of the plurality of downlink signals, timing for sending of an uplink signal;

determining a window of time for receiving downlink signals from the plurality of base stations, said controller determining the window of time based upon the determined timing for sending an uplink signal and said controller controlling the transmission power of an uplink signal based upon only downlink signals from the plurality of base stations having a receive timing during the window of time;

determining a minimum processing period for processing a downlink frame to provide transmit power control data to the base stations in a next uplink frame while maintaining channel timing control,

measuring a value of signal quality for one or more of the plurality of radio channels, and generating transmit power control data to be included in the next frame, from only the measured value of signal quality of respective radio channels received before the minimum processing period even if at least one of the plurality of downlink signals is not received prior to the start of the minimum processing period thereby limiting the generation of the transmit power control data.

74. (previously presented) A method of controlling a transmission power of a base station of a wireless communication system, comprising the steps of:

receiving in the base station an uplink signal containing transmission power control data, determining from the transmission power control data a transmission power of a next downlink signal, and

transmitting the next downlink signal at a power level responsive to the determining step,
wherein

generating the transmission power control data in a mobile terminal includes the steps of:

receiving a downlink signal in a terminal;

determining from the downlink signal an uplink signal timing required to maintain
channel control when generating and transmitting an uplink signal;

determining a window of time which ends a predetermined time prior to sending the next
uplink signal;

processing the downlink signal to provide a processing result when said downlink signal
has a receive timing during the window of time;

measuring of a respective value of signal quality for one or more of a plurality of
downlink signals;

generating transmit power control data to be included in the next uplink signal from only
the downlink signals having their respective value of signal quality measured during a
predetermined period of time even if at least one of the plurality of downlink signals is not
received during the period of time during which the measuring must occur; and

generating an uplink signal to be transmitted according the determined uplink signal
timing including the transmit power control data, the uplink signal transmit power controlled
according to the downlink signal having a receive timing during the window of time.

75. (previously presented) A method of signal processing in a wireless communication
system, comprising the steps of:

transmitting a downlink signal from a base station;

receiving a downlink signal in a terminal;

determining from the downlink signal an uplink signal timing required to maintain channel control when generating and transmitting an uplink signal;

determining a window of time which ends a predetermined time prior to sending a next uplink signal;

processing the downlink signal to provide a processing result when said downlink signal has a receive timing during the window of time; and

generating an uplink signal to be transmitted according the determined uplink signal timing, the uplink signal controlled according to the processing result from the downlink signal having a receive timing during the window of time.

76. (previously presented) A method of signal processing in a wireless communication system having a plurality of base stations in a soft handoff mode with a terminal, comprising the steps of:

transmitting a downlink signal from each base station of said plurality of base stations in said soft handoff mode;

receiving the transmitted downlink signals in the terminal;

determining from at least one of the downlink signals an uplink signal timing required to maintain channel control when generating and transmitting an uplink signal;

determining a window of time which ends a predetermined time prior to sending the next uplink signal;

processing one or more of the downlink signals having a receive timing during the window of time to provide a processing result for each downlink signal; and

generating an uplink signal, the uplink signal controlled according to the processing result from the downlink signals received during the window of time.

77. (previously presented) The method of claim 76 wherein the uplink signal has transmit power controlled according to the processing result from the downlink signals from the base stations in a soft handoff mode with the terminal received during the window of time.